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ABSTRACT

This paper describes work in progress on a project designed to provide the framework of an evaluation system which states may use to comply with evaluation requirements in the Education Amendments of 1976 (Public Law 94-482). The specific objectives are to: (1) develop and field test a process model to evaluate planning and operational processes of formally organized vocational education programs and assess the provision of services to special populations; (2) develop a product-impact model to evaluate student achievement resulting from participation in selected occupational programs; (3) develop and field test a product-outcome model to evaluate the career development of vocational students, both those completing and those leaving programs; and (4) prepare a guide describing the models, implementation procedures, and their usefulness on state and local levels. The evaluation system in development draws upon existing theoretical constructs and builds on the state-of-the-art in vocational education evaluation. (Author/GDC)

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MODELS FOR STATE USE IN EVALUATING VOCATIONAL EDUCATION: WORK IN PROGRESS

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I. INTRODUCTION*

1. Project Background

To assist States improve vocational education programs and to comply with the new legislative mandate for accountability, the U. S. Office of Education issued a Request for Proposal in July, 1977, for a project entitled, "Models for State Use in Evaluating Vocational Education." In competitive bidding, the project work was awarded to Contract Research Corporation Education and Human Development, Inc., Belmont, Massachusetts with Ellis Associates, Inc., College Park, Maryland as subcontractor.

The contract calls for providing a field-tested process evaluation model, a product impact evaluation model (which USOE may opt to field test), a field-tested product outcome model, and a State Evaluation Guide. The contract period extends from October 1, 1977 to April 1, 1978, after which the impact field testing option would occur.

The Office of Planning, Budget, and Evaluation, with Dr. Alice Scates as Project Officer, is sponsoring the project for the Bureau of Occupational and Adult Education; Dr. Mary Lovell of BOAE's Planning Office is Project Monitor. For the contractor, Dr. Ester Smith of CRC serves as Project Director, and Dr. Mary Ellis of Ellis Associates, as Field Director.

2. The Legislative Mandate

Vocational education plays an increasingly crucial role in preparing students for the world of work. Between 1961 and 1971 vocational education enrollments increased by 110% nationally and some states reported increases of more than 300%.** Furthermore, it has been projected that by the end of this decade graduates from vocational education programs in clerical and sales occupations and mechanical and construction occupations will fill at least one fourth of the job openings in those areas.***

In addition to serving large numbers of students across the nation, VEA programs are, at the same time, meeting the job preparation needs of several populations which have, historically, suffered from a lack of adequate occupational skills. Although available statistics indicate that there are some target groups whose needs must still be addressed, recent research findings show that black students and those from disadvantaged families are represented in vocational education at a level that is well above their percentages in the total population.****

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* The writers wish to acknowledge Alice Gordon and Dr. Mary Lovell for their useful comments.

** Lee, A.M. Project Baseline: Learning a Living Across the Nation: Second National Report, Vol. 1, North Arizona University: Flagstaff, Arizona, p. 7.

*** Ibid., p. 7.

**** Ibid., p. 6.

Despite the apparent attractiveness of VEA programs--as evidenced by the increasingly high enrollments--policy makers and funding agents at every level of government have faced a number of significant problems in seeking new directions for the future. One of these is the chronic shortage of information to assist:

- Congress in determining whether the State VEA programs are, in fact, meeting the legislative requirements to maintain, extend, and improve existing programs...develop new programs (so that) those in high school who have discontinued their formal education...those who already entered the labor market...those with special educational handicaps...will have ready access to vocational training or retraining... of high quality, which is realistic in light of actual or anticipated opportunities and...is suited to their needs...*

- Federal, State, and local planners in determining how best to proceed in preparing students for an economically productive life in the world of work. Specifically, data are needed to (1) determine the areas of occupational preparation that will best serve future labor market needs; (2) assess the quality and relevance of existing programs in meeting present labor market needs; and (3) examine the extent to which vocational education serves those with particular social, economic or physical needs.

The need for such information was explicitly recognized in the most recent Amendments. Until the 1968 Act amendments, VEA legislation did not require program evaluation per se. Further, the mandate did not define "evaluation" in terms of content or purposes, such as the specific kinds of data which would be useful for reporting, accountability and planning purposes. As a result, evaluations which have been conducted to date do not focus on the issues raised in the new amendments of 1976.

In the spring of 1975, the House Subcommittee on Elementary, Secondary and Vocational Education embarked on a series of hearings to determine the state of vocational education at that time. The theme of several sessions indicated strong Congressional concern for more and better information on the quality and impact of vocational education programs and on the extent to which the programs complied with the law.

The state-of-the-art of vocational education planning and evaluation, as it were, became increasingly clear as the hearings progressed. The lack of a data base for research, planning, and reporting was repeatedly made evident by witnesses' testimony. Both State and Federal officials cited the lack of evaluative information as the key barrier to more comprehensive planning and reporting. For example:

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* P. L. 88-210, Sec. 1.

- NIE decried the lack of available data by which to compare the advantages of vocational education programs with other types of occupational training.

- The Office of Education reported that it had no informational basis for determining national needs.

- State administrators indicated that because of the lack of an adequate data base at the local level of aggregation, program planning efforts at the State level continued to be haphazard and often consisted of simply reviewing the various LEA plans.

The 1976 VEA amendments (P.L. 94-482) represent a breakthrough in fostering development of a national vocational education data base geared to the needs of planners at all levels and to the information needs of OE and providing a framework for evaluation and planning. Mary L. Ellis, then President of the American Vocational Association, emphasized this need in her testimony before the Committee in 1976.

> "...comprehensive planning is the key to the future of vocational education. Duplication of effort, splintering of interest and uncoordinated use of resources are detrimental to the interest of the Nation."

The legislation essentially provides a system to direct the flow of work and information between the different State agencies and between the State and Federal levels of government. It states precisely what evaluation data are to be collected and how they are to be used. In addition, the Federal Regulations of October, 1977 provide further guidelines and clarification of the exact nature of the data to be generated.

II. THE PURPOSE OF THE PROJECT

Although the need for program evaluation and planning has been widely recognized in the past and most States have attempted to develop evaluation systems, the new Congressional mandate as expressed in Public Law 94-482 requires evaluation activities not previously carried out and increases the stringency of existing reporting methods. Numerous States have expressed the need for assistance in the development or modification of an evaluation system that will help States not only to comply with the new legislation but also provide information States and LEAs can use to improve programs. This project is designed to provide that assistance.

The project will help States in complying with Section 112 (b)(1) of the legislation (see Exhibits 1 and 2) by producing an evaluation tool--a field-tested evaluation design--for State use.

The challenge of the project, therefore, is to produce a design which is technically sound, which meets the requirements of the law,

EXHIBIT 1

Section 112(b)(1) states that:

> "(A) each State shall, during the five-year period of the State plan, evaluate the effectiveness of each program within the State being assisted with funds available under this Act; and the results of these evaluations shall be used to revise the State's programs, and shall be made readily available to the State advisory council;...
>
> "(B) each State shall evaluate, by using data collected wherever possible, by statistically valid sampling techniques, each such program within the State which purports to impart entry level job skills to the extent to which program completers and leavers--"(i) find employment in occupations related to their training, and "(ii) are considered by their employers to be well-trained and prepared for employment,...."

EXHIBIT 2

Section 104.402 of the Federal regulations, which implements Section 112(b)(1) of P.L. 94-482, calls for states to conduct evaluations which provide information about:

(a) Planning and operational processes, such as: (Process Evaluation)

(1) Quality and availability of instructional offerings;

(2) Guidance, counseling, and placement and follow-up services;

(3) Capacity and conditions of facilities and equipment;

(4) Employer participation in cooperative programs of vocational education;

(5) Teacher/pupil ratios; and

(6) Teacher qualifications.

(b) Results of student achievement as measured for example, by: (Product - Impact Evaluation)

(1) Standard occupational proficiency measures;

(2) Criterion referenced tests; and

(3) Other examinations of students' skills, knowledge, attitudes, and readiness for entering employment successfully.

(c) Results of student employment success success as measured, for example, by: (Product - Outcome) Evaluation)

(1) Rates of employment and unemployment;

(2) Wage rates;

(3) Duration of employment; and

(4) Employer satisfaction with performance of vocational education students as compared with performance of persons who have had had vocational education.

(Continued)

EXHIBIT 2 (Continued)

(d) The results of additional services, as measured by the suggested criteria under paragraphs (a), (b), and (c) of this section, that the State provides under the Act to these special populations:

(1) Women;

(2) Members of minority groups;

(3) Handicapped persons;

(4) Disadvantaged persons; and

(5) Persons of limited English-speaking ability.

which is realistic in the resources required to implement it, and which generates information that States and LEAs need for program management purposes.

To fulfill the project purposes, Contract Research Corporation is working closely with Dr. Mary Ellis, of Ellis Associates, Inc. to develop, on the basis of existing vocational education evaluation systems three components of an evaluation system that will reflect the concerns of Section 104.402 of the Federal regulations. Specifically, Contract Research Corporation will provide:

1. A field-tested Process Component to evaluate planning and operational processes of formally organized vocational education programs or projects supported by Federal, State and local funds.

2. A Product-Impact Component to evaluate student achievement resulting from participation in four selected programs.

3. A field-tested Product-Outcome Component to evaluate the career development of vocational students, both those completing and those leaving programs.

The Process and the Product-Outcome Components will be field tested in four to six States selected on a voluntary basis. The Office of Education reserves the option to field test the Product-Impact Component in a later phase. Project staff will provide technical assistance to the field test States in the adaptation of the evaluation system to State needs. Field test results will constitute the basis for revisions of the evaluation system.

The final product of this project will be a State Evaluation Guide. The State Evaluation Guide will be a basis upon which States can develop, or modify their existing vocational education evalution systems in light of the new legislation and of the need to generally improve the quality of vocational education evaluation.

The Guide will address issues of evaluation analysis, interpretation, and utilization of results in program planning and program improvement. In order to make this Guide useful and attractive to all relevant vocational education personnel, it will include a non-technical description of the purposes and uses of evaluation as well as technical sections dealing adaptation and implementation.

The State Evaluation Guide will focus on:

- The Description of the Evaluation System (process, impact, outcome) with a detailed analysis of evaluation components, data needs, terminology, measurement units, methods of data collection, forms and instrumentation, data storage, management and analysis, and application of evaluation outcomes to decision-making.

- The Adaptation of the Evaluation System to States existing evaluation practices.

- The Implementation Plan which will instruct States in a detailed task oriented manner how to implement the evaluation system.

- The Review, Analysis and Interpretation of evaluation data reported by LEAs for program planning and program improvement.

- The Evaluation Relationship between this evaluation system and other evaluation activities undertaken by the State or independent of State activities by other agencies, councils or associations.

III. INVOLVEMENT WITH THE FIELD

A key factor in fulfilling the project purposes is the active involvement of educators and potential consumers of the State Evaluation Guide in the project. Four basic mechanisms have been developed to ensure this involvement: (1) a Policy Advisory Council (PAC); (2) a Technical Advisory Panel (TAP); (3) briefings and discussions with Federal officials responsible for vocational education policy-making; and (4) informal meetings and discussions with State Directors of Vocational Education

The challenge of making the product useful requires that potential consumers be involved in the development effort. Throughout the course of the project, CRC is working with a Policy Advisory Council on policy and procedural matters. The eight PAC members who were selected from many areas of vocational education consist of a:

- State Director of Vocational Education

- President of a State Board of Vocational, Technical, and Adult Education

- Member of a State Advisory Council of Vocational and Technical Education

- Assistant Superintendent, Division of Vocational Education (LEA level)

- Superintendent of a major urban public school system

- Management information services supervisor (SEA level)

- Division administrator for external support service.

- A Labor Union Representative

Consulting with project staff on technical questions is a Technical Advisory Panel (TAP). This group, which consists of experts in evaluation, tests and measurement, and statistics, possesses both technical knowledge and a sensitivity to the tactical considerations of evaluation system building and field testing in vocational education.

Briefings and discussions with Federal officials responsible for vocational education evaluation and with policy-makers are also held at appropriate times during the project. The information elicited at such meetings are essential to ensure that the State evaluation system under development avoids duplication of effort with other evaluation and data collection activities. CRC staff have worked with officials from the Bureau of Occupational and Adult Education and the National Institute of Education to coordinate efforts among the total network of evaluation activities in each agency, and in the vocational education community at large. These points of coordination include the requirements of the Vocational Education Data System (VEDS).

The fourth information link with the vocational education system occurs through informal meetings and discussions about project substance and procedures with a small group of State Directors of Vocational Education who have expressed an interest in the work being conducted at CRC.

IV. THE EVALUATION SYSTEM

The need for program evaluation and the utilization of evaluation data in program improvement and planning have been strongly emphasized in vocational education literature and in State evaluation practices. The Kentucky Bureau of Vocational Education, for instance, lists ten areas in which evaluation data are needed:

> Interrelated planning and evaluating procedures are extremely valuable if public funds are to be used effectively and efficiently in meeting Kentucky's human and manpower needs. Other reasons for planning include: (1) the legal requirements of funding agencies, (2) the magnitude of the decision-making situation at all levels and in particular in the local educational agency in its efforts to carry out meaningful vocational education programs, (3) the demand for justification of resource allocations, (4) the necessity for total comprehensive programmatic efforts to overcome vocational education problems and to insure elimination of overlapping and duplication of efforts, (5) the necessity for effective coordination, cooperation, and communication, (6) the urgency for public accountability, (7) the indispensable requirement for timely, relevant and valid information, (8) the essential requisite for the establishment of priorities among multiple goals to meet expanding demands with

limited resources available, (9) the importance of adequate and meaningful programs, services, and activities to meet the needs of all persons in the area who need and can benefit from vocational education.*

However, the limitations which vocational education evaluation has often experienced require that more systematic evaluation approaches with substantial planning of activities and involvement of appropriate groups, adequate staff and funding commitments be used.

The definition of evaluation as a determination of "the worth of a program, product, procedure or objective or the potential utility of alternative approaches designed to attain specified objectives"** suggests that evaluation is aimed not only at the systematic identification, specification and collection of data but also at the analysis, interpretation and use of the data to determine the "worth" of program processes and products.

These concerns must be taken into account in the development, modification and implementation of any evaluation system. An evaluation system, Malinski notes,*** must provide information that will assist in setting program, service or activity objectives, determine the extent to which current objectives are achieved, and provide a procedure for identifying, classifying, collecting and reporting information on students upon entering programs, monitor student performance, and follow-up students after program completion. An evaluation system must have utility at all levels of the program. It cannot be developed in isolation but must involve, during its development stages, people who will be affected by it and who know the reality of the vocational-education process.

This project reflects these concerns in its approach to the development of an evaluation system. To assist States in complying with the evaluation requirements set forth in section 104.402 of the regulations, this project will develop the framework of an evaluation system which can be used by State Boards. The evaluation system, under development, has the following characteristics:

- It consists of three evaluation components--process evaluation, product-impact evaluation, and product-outcome evaluation--which form a comprehensive evaluation system;

- It draws upon the state-of-the-art in vocational education and builds on existing theoretical constructs, yet takes into account constraints in vocational education evaluation;

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* Bureau of Vocational Education, State Department of Education: Kentucky Handbook for Planning and Evaluating Local Vocational Education Programs (Frankfort, Kentucky, 1971), pp. 2-3.

** Ibid., p. 13.

*** Malinski, Joseph F., Planning Techniques for Local Programs of Vocational Education (ERIC Clearinghouse of Vocational-Technical Center for Vocational-Technical Education, Ohio State University, Columbus, Ohio, 1972).

- It accounts for the diversity in vocational education programs and State evaluation practices;
- It includes mechanisms for data interpretation and data utilization in program planning and program improvement;
- It is generic in nature and can be adapted to the special needs of any given State.

1. Phases of Evaluation System Development

The three component evaluation system--process, product-impact, and product-outcome--is being developed in several phases. These phases include:

(a) Extensive literature search and review of vocational education evaluation methods, measurement issues, theoretical models, State and local evaluation systems, instruments, and data collection mechanisms. The purpose of this review is to assess the state-of-the-art and identify systems, components of systems, and measurement instruments for use in this project.

(b) Development of the generic evaluation system. The generic system will include core evaluation questions, data necessary to answer these questions and the potential sources of data. It will present evaluation methodologies designed for different evaluators (LEA, SEA, teachers, administrative staff, visitation team) using different evaluation techniques (i.e., self evaluation, on-site visitation, surveys). The generic system will provide operational instructions on how to carry out evaluation activities (i.e., how to sample, how to locate students, how to train evaluation staff), how to develop evaluation instruments or what existing instruments, tests and measures to use. The generic evaluation framework will deal with data analysis, data interpretation and data utilization for program improvement and planning. In addition, it will provide a methodology for the adaptation of the generic evaluation system to State needs, and to existing evaluation practices and procedures.

(c) Review and revision of the generic evaluation system on the basis of input from vocational education evaluators, administrators and practitioners involved in the project. Their involvement will assure that the resulting evaluation framework is useful, usable and responsive to the needs and practices of potential users.

(d) Field test of the evaluation system* in three to six States and its subsequent revision.**

2. Process Evaluation

a. Purpose of Process Evaluation

The purpose of process evaluation is to assess the planning and operational processes of formally organized vocational education programs or projects supported by Federal, State or local funds. Process evaluation serves a number of functions. Process evaluation:

(1) provides information for informed decision-making regarding program improvement and program planning;

(2) monitors the achievement of program milestones;

(3) identifies problems or defects in program design and implementation;

(4) describes the "status" of the program in terms of the extent to which the program

- is accessible to potential students in general and to special populations in particular,

- meets existing State standards of quality concerning instructional offerings, guidance, counseling, placement and follow-up services, capacity and condition of facilities and equipment, employer participation in vocational education cooperative programs, teacher/student ratio, and teacher qualifications.

(5) fulfills data reporting requirements of LEAs, State, and Federal agencies.

Process evaluation, conducted on a continuous basis, can detect areas or programs in need of corrective actions and provide information to decision makers whether to increase the activity or program, maintain it as is, modify it, decrease or eliminate it.

b. Current Practices in Process Evaluation

Reviews of process evaluation systems in use by States*** show that process evaluation undertaken focuses mainly on the delivery structure including:

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* The Office of Education exercised the option on field testing the Product-Impact component. This option will be reviewed upon the completion of the development of the Impact component.

** The field test phase is describedin more detail in Section V.

*** In reviewing existing State evaluation models, New Educational Directions, Inc., collected information during October 1974-April 1975 from 45 states, of which three reported that they did not have an evaluation system, eight sent a letter describing their involvement in evaluation and 34 sent evaluation materials. A more recent collection of state evaluation models, instruments and proceudres (from 42 states) was compiled by Contract Research Corporation through secondary sources.

- administration and supervision
- staff
- program planning
- program objectives
- instructional materials and supplies
- instructional activities and procedures
- community need
- community resources and involvement
- facilities and equipment
- vocational-technical student organizations
- advisory committees
- occupational work experience
- ancillary services.

Two methods are common in process evaluation: self-evaluation and visiting team evaluation--many States use both methods. Self-evaluation or self-study, probably the most widely used method of evaluation in vocational education, is conducted by a locally appointed steering committee composed of vocational education practitioners and administrators. Many LEAs also include students, parents and community business and industry representatives in the steering committee. The method in which local evaluation is conducted varies. While in some States, local evaluation committees follow prescribed criteria and procedures, in other States the evaluation criteria, content, scope, method and schedule are developed by the selected steering committee. Several methods of self-evaluation are used: interviews, observations, questionnaires or hearings. Since the success of self-evaluation depends on the committee's objectivity and evaluation skills, much effort is put forth by some States in the training and preparation of committee members. The locally conducted evaluation results in a document summarizing evaluation results, identifying areas of concern, and presenting recommendations.

Visiting Team. The visiting team evaluation is often conducted after local evaluation is completed. The team is composed of individuals not associated with the district. The team includes: business and industrial representatives, educators and students from outside the district. In some States the team consists of staff members from the Division of Vocational Education Area Office. The visiting team evaluates the program through analysis of the Local District Plan, community and school data, observation and interviews with administrators, teachers, students, counselors, and business and industrial representatives. The teams evaluation report includes recommendations, identification of problem areas and suggested solutions.

The primary purpose of the Product-Impact Component is to provide LEAs and States with evidence of student achievement in occupational skills at the time the student leaves a program. Student achievement constitutes an important indicator of program "quality" or "effectiveness." The evaluation--to be conducted by districts or States--will focus on changes occuring in students with respect to:

- the acquisition of specific occupational skills
- the development of work related characteristics, including work attitudes, good work habits, and knolwedge about the world of work.
- student satisfaction with the program.

Most schools and districts currently use some type of assessment procedures for determining levels of student competency; these range in complexity from standardized achievement tests to grades based on day-to-day student performance. The Product-Impact Component will include a variety of tests and measures that will give States and districts flexibility and latitude in choosing assessment procedures. These will include:

- standarized tests (i.e., State and National professional certification and licensing tests, NOCTI developed tests)
- "Pencil and paper" tests which have been developed for specific curricula or by instructors to test student achievement levels.
- "Hands-on" testing, which requires students to physically demonstrate occupational skills for programs for which such testing is appropriate.
- Teacher assessment report of student achievement, based on close observation of skills achievement and personal growth over time.

Although there is a wide variation in the objectivity and scope of these different procedures, each has the capacity to provide evidence of student achievement levels at the time of program exit. The extent to which students do or do not meet desired levels of competency is recognized to be of vital importance to teachers, district administrators and planners, and, in many cases, to State program improvement and planning staff as well.

The current project will not attempt to develop a Product-Impact Component which covers all occupational service areas offered by vocational education programs. Four occupational areas will be selected, based on the availability of testing mechanisms for specific skill areas.

c. Description of the Process Evaluation Component

There is concern that process evaluation currently amounts to "a little more than counting and review."* Desirable improvements are directed toward clarifying the relationship of process and product (impact and outcome) evaluation results; interpreting results within the context of the role of vocational-technical education in society; assessing the extent to which vocational programs identify and meet needs of special populations; and determining program quality and program ability to meet its objectives.

Effective process evaluation is based on the specification of program objectives, standards of quality, and the utilization of program evaluation data in program improvement and program planning. The Process Component, therefore, will focus on uses of data (much of which is already collected) for evaluation purposes by delineating methods for determining the extent to which specific program components meet quality standards** and requirements of all groups of vocational students, particularly those with special needs. It will provide guidelines for formulating evaluation findings in terms that are useable by decision makers.

3. Product-Impact Evaluation

a. Purpose of Product-Impact Evaluation

Vocational educators recognize that:

The success of vocational education training programs depends on how well program participants and graduates are equipped to perform on the job. A commonly accepted premise among vocational educators is that program excellence can be achieved only when students are prepared with the necessary tools for successful employment. Thus, the evaluation of occupational competence is an essential component of an effective evaluation system.

The evaluation of occupational competencies will help justify decisions regarding program offerings and insure harmony between education programs and specific job requirements. The competencies of program graduates and participants bear heavily upon employer satisfaction.***

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* Ad hoc Task Force, Minnesota State Department of Education, A Review of the Present SEtting and Recommendations for Next Steps in Implementing an Approach to Evluating Vocational-Technical Education in Minnesota (May 1977).

** The Process Component must assume that individual states have developed or are prepared to develop some standards of quality.

*** Program of Vocational Education Florida State University, "Data based Locally Directed Evaluation of Vocational Education Programs; Component 6: Evaluation of Occupational Competencies" (July 1977); p. 6-1.

The Product-Impact Component will include existing testing or measurement mechanisms for assessing student competency. The tests are designed to be administered by either States or districts, depending on State policy and practice. Similarly, the findings will be interpreted and utilized by local instructional staff and State administrators to assist program improvement, curriculum development, and program funding.

b. Development of the Product-Impact Component

Of the three system components to be developed for State use, the Product-Impact Component possibly offers the greatest number of challenges, since it is to be a composite of many different approaches to testing and measurement. For this reason, the CRC staff is conducting a literature search and review which focuses on the identification of testing instruments and procedures that have been developed in the past and have been found to be effective. Utilizing the expertise of measurement and testing specialists, the instruments and procedures will be assessed for reliability, practicality, and applicability to the occupational areas which will be selected as examples in this component.

c. Special Concerns in Developing the Product-Impact Component

Based on a preliminary review of the literature and on discussions with State and local educators, it is apparent that most teachers, schools or districts do currently assess student competencies in some fashion; the procedures may be as complex as the administering of a standardized achievement test or as simple as grading student performance. The problem is, however, that these measures of skill levels are frequently used to evaluate student performance, not to identify program strengths and weaknesses. The Product-Impact Component, therefore, will contain a section which explains the uses of measurement findings for program assessment purposes, including:

- instructions for administering tests or otherwise assessing student performance.
- guidelines for interpreting the data generated by the Product-Impace evaluation.

Because the Product-Impact is experimental, the Office of Education opted to review field test feasibility following the development of this component.

4. Product-Outcome Evaluation

a. Purpose of the Product-Outcome Evaluation

The Product-Outcome Component is intended to address long-range effects of vocational education on the work experiences of former

students. The indicators of program "success" or "effectiveness" have been specified by the recent legislation and include:

- the ability of former vocational students to obtain employment, compared to those having non-vocational education backgrounds;
- the earning power (i.e., wages) of vocational education students, relative to that of other workers in the same occupational field;
- the stability or upward mobility shown in career patterns of former vocational students, relative to that for other workers in the same field;
- the extent to which former vocational students have obtained employment in occupational areas directly or indirectly related to their educational program areas; and
- the competency with which former vocational students perform their occupational skills and exhibit positive work attitudes compared to workers without vocational education training.

b. Current Practices in State Outcome Evaluations

A number of States are already conducting follow-up or outcome evaluations. CRC staff have examined current efforts to determine the extent to which existing systems meet the specifications of the new legislation and to identify particular evaluation procedures and mechanisms that are appropriate for inclusion in the Product-Outcome Component under development.

There are two methods that are currently employed by States to follow-up former students:

- State wide follow-up, in which States collect data directly from former students; this procedure usually involves a sample of former students, since a survey of the entire group would be too expensive.
- locally based follow-up, in which vocational education teachers are required to collect post-program data from their former students and to report these data to the States; the teacher follow-up method may include all former students since each teacher tracks only a fraction of the entire survey population.

Where States collect follow-up data directly, a number of methods are employed for tracking the addresses of former students, depending on the nature of the State educational information system. In States which do not keep information on former students, the State Board may contact schools or districts for the last known mailing addresses of former

students who have been selected for inclusion in a survey sample. Once these are obtained, the former students are contacted, either by postcard to verify the address or by a cover letter and a survey questionnaire. When students have been tracked, some States employ procedures to obtain an adequate response rate, such as a postcard reminder or a second questionnaire mailing. These procedures require staff to register responses as they are returned and to follow-up on those individuals that have not responded by a certain date.

Where former students are tracked by teachers, the teachers may follow several different procedures, including:

- keeping a record of mailing addresses for all students leaving their program;
- updating address records through periodic telephone calls to the former student or the student's family; and
- updating address records through annual mailings.

In the experience of States using teacher follow-up this method produces a high response rate. Each vocational education teacher is required to collect and report former student data to the State. The follow-up information is obtained by teachers either through telephone or personal interviews with former students. The data generated from these interviews are then entered on a survey form by the teacher. According to a recent study* this is the point where error is most likely to occur as teachers may make biased or inaccurate judgments relative to various aspects of the survey questions (i.e., extent of job relatedness, the amount of additional education received, the former student's employment status). For example, teachers tended to report jobs as training related when, in the opinion of the State Board, they were not related or only partially related. The State plans to rectify such errors by providing more explicit guidelines for completing the questionnaires.

Only few States include employer based evaluation surveys to determine the skill levels and work readiness of former students. Employers, in those States are identified through surveyed former students. Although this method of employer selection may have a biasing effect, there does not appear to be another cost-effective alternative for identifying employers.

None of the States currently conducting follow-up evaluations use any form of control or comparison group to assess differences in work experience, wages, and skill levels between vocational and non-vocational students.

c. Description of the Product-Outcome Component

To meet the requirements of the recent vocational education legislation, the Outcome evaluation will be comprised of two major sections:

* Oklahoma, Parallel Study, 1977.

- a student survey to determine the work experiences, wage levels, and career patterns of former vocational students.

- an employer survey to determine former students' skill levels and work-readiness.

In order to provide flexibility for States initiating the follow-up procedure for the first time, the Product-Outcome Component will present guidelines for both the State-wide follow-up and the locally-based follow-up approaches. In each case the advantages and disadvantages of the method will be detailed.

For States selecting the State-wide follow-up procedure, guidelines will be provided for conducting:

- appropriate sampling procedures and determining sample size

- address tracking

- additional follow-up procedures to produce adequate response rates

The locally-based follow-up procedure will include:

- procedures to ensure continuity of contact with former students

- interview procedures

- guidelines for recording and reporting data

The Product-Outcome Component will also provide detailed information on and recommendations concerning the conduct of the former student survey regardless of the follow-up method used. These will include:

- specifications for basic student data to be collected prior to program completion

- guidelines for initiating the survey, once the student has left a program;

- recommendations for the development of a longitudinal data base for former students, including:

  -- how often each respondent should be surveyed
  -- how long after leaving a program a student should be surveyed

- guidelines for identifying comparison groups with whom former student experiences may be compared.

The Outcome Component will also specify procedures for contacting employers, based on the existing practices described earlier.

In addition, CRC will develop sample evaluation instruments for the Outcome survey and specify the minimum data that must be collected to comply with the legislative mandate. These will include questions realted to:

Student Survey:

- employment situation
- wage levels
- duration of employment
- job relatedness to training
- job satisfaction

Employer Survey:

- level of satisfaction with employee's job skills, as compared with those of non-vocational students

- level of satisfaction with employee's work readiness as compared to that of non-vocational education.

Following these directives for data collection, the Product-Outcome Component will also provide guidelines and recommendations for data analysis and interpretation of the findings as they relate to program improvement and program planning.

V. FIELD TESTING

1. Purpose of the Field Test

The field test of the evaluation components will determine whether the evaluation system, in fact, has the capacity to generate the type of information that is mandated by the legislation and verify its usefulness to States. However, field testing procedures will vary from the traditional field test concept in which "fully developed" products are used and subsequently refined on the basis of the findings. Instead, a generic evaluation system will be developed. It will not be until the implementation stage of the project that the system will be adapted to meet the requirements of the specific States which will participate in the field test.

2. Selection of Field Test Sites

Between three and six States will be selected for the field test. These States will be chosen on the basis of the following criteria:

- interest and willingness to participate: this is an essential point, since States themselves will have to commit staff and effort for the field test.
- the extent to which the State already has an evaluation system in place: it is important to know whether the evaluation system will work for States which conduct little evaluation at the present time, as well as for States with well developed evaluation systems.
- the availability of State funding for the field test: under the terms of the present contract, States will fund the evaluation activities which take place during the field test.
- geographic factors: CRC will attempt to select States that are representative of the major sections of the country.
- State size: it is important to identify differences in State evaluation and implementation requirements for States having large and small enrollments.
- prior State participatin in the VEDS field test project: since data generated by these evaluation components must be in coordination with VEDS requirements.

3. Description of Field Test Activities

The field test activities fall into three major categories of endeavor:

- the pre-implementation phase
- the implementation phase
- the post-implementation phase

a. The Pre-Implementation Phase

The pre-implementation phase consists of three primary activities:

- the development of a generic field test plan
- contact with State directors and administrators who will be participating in the field test
- the adaptation of the generic evaluation system to meet specific State requirements.

i. Development of a Generic Field Test Plan

The generic field test plan will serve as a guide to the field test teams in presenting the basic framework within which the field test will operate. When each field test State's special needs have been identified, a State-specific field test plan will be developed.

ii. Contact with State Directors and Evaluation Staff

When the field test States have been selected, CRC's field test team will meet with the State level staff who will be involved in implementing the evaluation. This meeting will serve as an in-depth orientation to the current State evaluation practices, data collection efforts, management information systems, and evaluation instruments.

iii. Adaptation of the Generic Model

Following the collection of detailed information on participating States' data collection and evaluation practices, a comparison will be made between each State's evaluation system and the generic evaluation system developed by CRC. The analysis will proceed from a general evaluation level (i.e., how extensive is the State's student data base?) to the detailed examination of the structure and mechanism by which these components operate (i.e., is the data base automated?), the measurement of data (i.e., how is a vocational education student defined?), and the actual data collection forms that are used in collecting or documenting the data. Through this analysis, gaps and weaknesses of each State evaluation system will be identified. This analysis will serve as a basis for changes that need be made in the State system to correspond with the new legislative reporting requirements.

b. The Implementation Phase

In the implementation phase of the field test the State specific evaluation components will be developed and tested by the participating States. There will be four major aspects to the implementation phase:

- development of the State-specific evaluation component
- development of a State-specific implementation plan
- technical assistance and monitoring by the CRC field test team
- a final site visit following the completion of the evaluation activities

i. Development of the State-Specific Evaluation Components

The State-Specific Evaluation component will be a modified (tailored) edition of the generic component, adjusted to State's former evaluation system and to State's needs. The State-Specific component will provide a description of the State's vocational education organizational and program structure, activities and personnel, data needs, data sources, definition of variables and measurement units, reporting or measuring forms and instruments, communication and feedback mechanisms and the overall relationship between data aggregation, analysis and interpretation of evaluation outcomes, and application to program planning and program improvements.

ii. Development of an Evaluation Implementation Plan

The Evaluation Implementation Plan will provide a detailed guide to evaluation activities. It will describe on a step-by-step basis, each evaluation task that must be accomplished, the timing and duration of each task, expected outcomes, data needs, activities undertaken, personnel involved, method of carrying out the task, instruments used, and analysis of task outcomes required. The Plan will also identify tasks whose implementation will require the provision of technical assistance and monitoring by CRC.

iii. Provision of Technical Assistance, Training, and Monitoring

In order to ensure that the State staff responsible for implementing the field test are fully conversant with the evaluation specifications set out in the State-specific evaluation component and the field test, CRC will conduct a training/orientation session for each group at the beginning of this phase.

The CRC staff will continuously monitor the implementation processes in each participating State, throughout the implementation phase. The purposes for doing so are:

- to document in detail the implementation process

- to provide support to State staff involved in the implementation
- to collect information upon which final revisions of the State-specific evaluation system, the evaluation implementation, and the generic evaluation system can be made.

Monitoring will take place through telephone interviews and site visits. conducted at pre-arranged intervals.

Technical assistance by CRC will be made available to participating States on an as needed basis. The nature of this assistance, however, will be to clarify specific points or solve problems that arise during the course of the implementation; CRC staff will not carry out data collection or evaluation activities.

iv. Final Site Visits

The final site visits, to be held at the conclusion of each State's field test will consist of an extensive review of the field test experience and outcomes.

c. The Post-Implementation Phase

Post-implementation activities will consist of the evaluation and analysis of field test results. Field test data will be used in revisions of the State evaluation system and implementation plans. Furthermore, aggregated data from all the field test States will be used in the refinement of the generic evaluation system and in the preparation of the State Evaluation Guide.

VI. CONCLUDING REMARKS

The challenges posed by this project are many. These challenges stem from the project's intent to develop an evaluation system that will be of use to States in complying with the recent legislation, in particular with the evaluation requirements of Section 104.402, in improving their evaluation of vocational programs at the LEA and SEA levels, and in using evaluation data for program planning and program improvement.

In selecting a method for developing an evaluation system that can be useful for and usable by State and local practitioners, program managers, and planners this project recognizes that...

> While there is a great amount of literature on vocational-technical evaluation, each approach has several advantages and disadvantages. There is no foolproof method of evaluation that would work for every vocational-technical program which would always provide the most useful information...No matter what design is used for evaluating a particular program or school, the most important criteria to keep in mind are that the system must meet the needs of the school or program, and a desire and cooperation to implement the results to improve the programs should be evident on the part of all concerned audiences.*

This paper, a report on work in progress, attempts to reflect these concerns and describe how the project challenges will be met by adopting a unique approach which builds, to the maximum extent possible, on existing evaluation systems, procedures and instruments accounting for and accommodating different practices. It involves throughout the project conduct a variety of vocational education personnel in the development and refinement of a generic evaluation system that can be adapted to State and local needs.

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* New Education Directions, Inc., "Evaluation of Vocational Technical Education, Phase I, A Review of Literature," prepared for: The Indiana State Board of Vocational Technical Education, July 1975, pp. 24-25.